

DP-305317

MAGNETIC FLUX REGULATOR TO REDUCE PERFORMANCE CHANGE
CAUSED BY AMP-TURN VARIATION

ABSTRACT OF THE DISCLOSURE

[0028]

A valve assembly has a valve body defining a chamber with a controlled outlet. A stop and seat are spaced from each other and are supported within the chamber in axial alignment with the controlled outlet. A plunger reciprocably moves between the stop and the seat to open and close the controlled outlet through the operation of a solenoid assembly. The solenoid assembly includes a spool supported between two plates. An electrical coil is disposed around the spool for receiving electrical current and generating a magnetic flux. A primary magnetic flux loop forms a path around the spool, through the two plates, the plunger and the stop to move the plunger away from the controlled outlet. An annular magnetic flux regulator made of magnetic conductive material is disposed in the spool to provide a secondary bypass magnetic flux flow path for a portion of the generated magnetic flux during high amp-turn operating conditions. The magnetic flux flowing through the bypass path does not contribute to the magnetic force acting on the plunger.